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Title: Production Qualification Training Course 6 of 8 Change Product
Definition Authorization

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Production Qualification Training

Course 6 of 8

Change Product Definition Authorization

Joint Initiative: W-8 Group and ALDW-DAQ

Curriculum Overview

This curriculum is intended to:

- Teach you about Change Product Definition Authorization
- Explain the course subject in detail
- Provide references and guides to help you after viewing the training



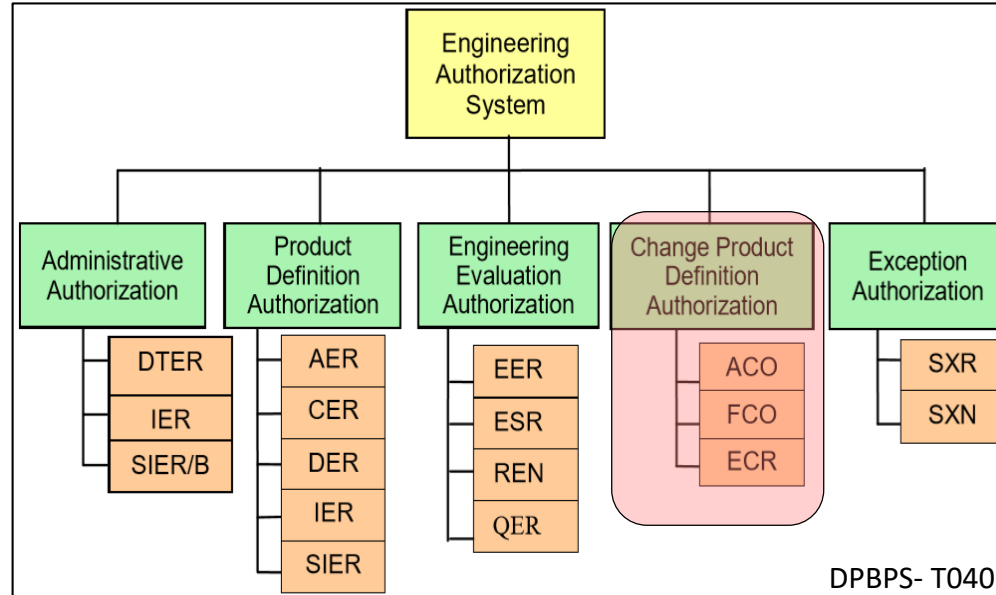
Utrain Course	Procedure	Title	Course #
RR 49297	W-SE-0008	Engineering Authorization System	Course 1
RR 49256	W-SE-0044	Production Qualification Procedure	Course 2
	W-DG-0003	Engineering Evaluation Plan Template	Course 2
	W-DG-0004	EE Data Package Template	Course 2
	W-DG-0005	Engineering Evaluation (EE Data Package Checklist)	Course 2
RR 49262	W-SE-0046	Administrative IER and SIER/B Procedure	Course 3
RR 49272	W-SE-0051	Definition IER and SIER Procedure	Course 4
RR 49273	W-SE-0052	DER, AER, CER Procedure	Course 4
RR 49268	W-SE-0048	Re-evaluation Notices (RENs) Procedure	Course 5
RR 49256	W-SE-0049	Engineering Evaluation Release Procedure	Course 5
RR 49271	W-SE-0050	Qualification Evaluation Release Procedure	Course 5
RR 49298	W-SE-0047	Advanced Change Orders, Final Change Orders, and Engineering Change Requests Procedure	Course 6
RR 49257	W-SE-0045	SXN/SXR Procedure	Course 7
RR 53083	TBD	Engineering Evaluation Overview	Course 8
	W-DG-0002	EA Cheatsheet and Checklist Desktop Guide	All



Engineering Authorization System Overview

The Engineering Authorization (EA) System provides a formal communication method among M&O contractors, including configuration control and record management of EAs

EAs authorize actions that affect product definition and related product and document information related to development, production, surveillance and dismantlement activities

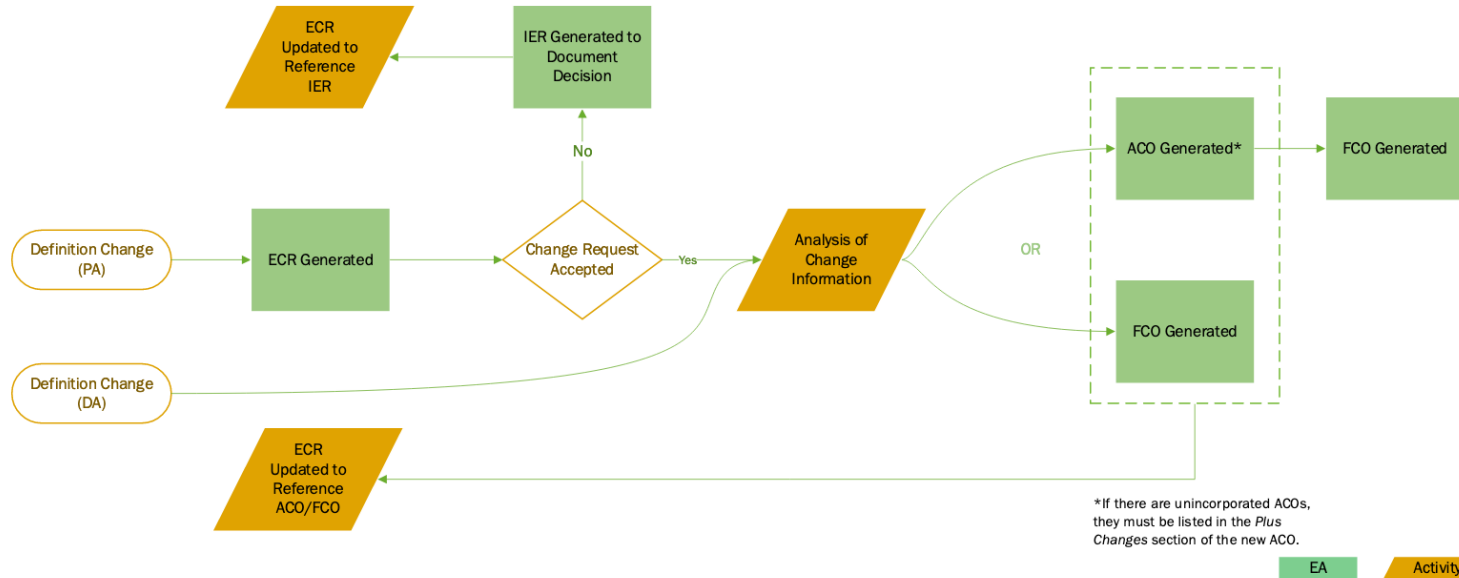


Training Objectives

- At the end of this training, you will:
 - Recognize the three types of Change Product Authorizations and their usage
 - Understand the requirements for the three types of change authorizations
 - Understand the minimum and recommend approvals
 - Know where to gain assistance in executing change authorizations
 - Understand change class definitions as related to change authorizations
- What this training will not do:
 - Authorize you to author or approve EAs
 - Train you on how to navigate the EA tool (Arbortext), PDMLink, or PRIME



Process Overview



Change Releases support change activities by specifying changes (ACO and FCO) or requesting changes (ECR) to product definition. Rejected change requests are also documented. The EA System requires the issuance of a Change Release to authorize changes to product definition previously released by a Definition Release EA.




Engineering Change Request (ECR)

- An ECR is used to formally request changes to product definition from the DA with responsibility for the product definition
- The ECR may be Production Agency (PA) or Design Agency (DA) initiated.
- The ECR is mandatory if the requested change is against a Pentagon /I/ (interface control), /S/ (nuclear explosives safety) , or /T/ (nuclear explosives tester) feature.
- The DA responds with confirmation or rejection within 60 days of the request.
 - The response is transmitted using an Administrative Information Engineering Release (IER) and the decision is documented within a revision of the ECR.
- If the ECR is accepted, the requested change is released as an ACO and FCO.
- For traceability, the ACO/FCO/ECR must cross-reference each other.



Desktop Guide, W-DG-0002

- A desktop guide has been generated to aid in validating, authoring and approving EAs
- Relative to change product definition, the guide includes:
 - A checklist for verifying that a ECR received from a PA is valid and
 - A users guide to creating an ACO and FCO

 <div>Weapons Program Desktop Guide</div>		
EA Cheatsheet and Checklist Desktop Guide		
Los Alamos National Laboratory • P.O. Box 1663, Los Alamos, NM 87545		
Number	Revision	Effective Date
W-DG-0002U	C	August 12, 2021



Engineering Change Request (ECR) Checklist

ECR Acceptance Checklist			Overall Disposition	
ECR _____			Accept ____	Reject ____
#	Category	Check	Yes	No
1	Change Class	Does change class identified match category of change? Class C cannot be used if the changes could degrade safety, stockpile life, function, reliability, or interchangeability.		Reject
2	Affected Assemblies	Is this field blank or none?	Reject	
3	Weapon Program	Is this field blank, none, or multi?	Reject	
4	Related Authorizations	Is this field blank or none?		
5a	Distribution	Does the EA have a Production Liaison listed? [LANL W-8]		Reject
5b	Distribution	Does the EA have the component lead listed? [Q or W lead (or MST/C, etc if delegated)]		Reject
6a	Drawing List	Does the EA have the appropriate drawing, or product specification listed?		Reject
6b	Drawing List	Is more than one drawing, or product specification called out in this ECR?	Reject	



The ECR Checklist assists with evaluating and accepting ECRs provided to LANL. This checklist addresses only current systemic issues associated with ECRs. It was not intended to be inclusive of all categories associated with an ECR.



Advanced Change Order (ACO)

- The ACO is a mandatory change release for product definition under change control (released by AER or CER) when the product definition change must be issued in advance of the integration of the changes into the controlled definition
- The ACO provides specific detailed description of the definition change and authorizes the PA to implement the change in advance of the release of revised definition
- Until all changes are incorporated, an additional ACOs against the product definition must include the unincorporated changes as “plus changes”
- Drawing change must be released within 90 days of the issuance of the ACO
- An ACO must always be followed by an FCO
- The ACO must reference the FCO (and ECR when applicable)



ACO Cheat Sheet

SAMPLE

References:
NAP-24A
T040
T044
W-SE-0047

ACO Cheatsheet

Rev A

This document: W-DG-0002

- An Advance Change Order (ACO) specifies a change to product definition in advance of the actual revision.
- The ACO must be closed by a Final Change Order (FCO) which incorporates the changes in the ACO into the design document and releases a new issue of that document.

NWC Release Date:
Category:
Authorization Title:
Document Number:
Revision:

2018 08 01 6:30:05 MT
Change Release
Advanced Change Order
20191231LA
0

Weapon Program:
Affected Assemblies:
Related Authorizations:

B2-1
1K9876
FCO 20191234LA
CER 20192345LA
FCO20181234LA

Code: ACO

ICO: NONE

Change Class: C

Relate applicable ICO if applicable

Class C cannot be used if the changes could degrade safety, stockpile life, function, reliability, or interchangeability

The next-level assembly that is affected by this product FCO

List FCO that closes ACO. If this is a Plus Change ACO, list applicable ACO(s) already released but not incorporated.

APPROVAL

Site	Name
LA	Someone Here
LA	Someone Else Here

Organization	Date Approved
Q-nn	2019-05-01
W-nn	2019-05-01

DISTRIBUTION

	Site	Name
From:	LA	Someone Here
To:	KC	Someone There
Copy To:	LA	Someone Else
	KC	Another Person

Organization	Phone Number	E-Mail
nnn	505-456-7890	zzzz@lanl.gov
nnn	816-456-7890	yyyy@kcp.com
nnn	505-456-7891	xxxx@lanl.gov
nnn	816-456-7891	www@kcp.com



ACO Cheat Sheet

SAMPLE

REASON FOR RELEASE

/Rev 0/ (2018-08-01)

1.0

This ACO is being released as Plus Changes to ACO 20190865LA to revise diameter in Zone C2 of drawing 1K1234 from 6.2 MAX to 6.3 MAX. This ACO and ACO 20190865LA will be closed by FCO 20191234LA.

Succinctly state the reasons for the EA release. List FCO that will close the ACO.

REFERENCE AND REMARKS

1.0

DA evaluation of the diameter indicates it can be increased by 0.1 mm without negatively impacting safety, operability, reliability, interchangeability, assembly, storage life, completeness of assembly, or the ultimate use.

Document the DA's complete administrative and technical justification of why this deviated product is not a problem for the authorized use (next level assembly interferences/impacts over the life of the product)

DRAWING LIST

Drawing Number	DA Suf	Dwg Iss	Dwg Loc	Drawing Title	Drawing Information
1K1234	00	B	LA	(U) WIDGET	NONE

Identify the product definition document(s) actually being changed by the ACO. Could be a product specification, PQ or drawing.

INCORPORATION INSTRUCTIONS AND MATERIAL DISPOSITION

JUSTIFICATION OF CHANGE CLASS (AND CORRESPONDING EFFECTIVITY POINT)

No impact to next level 1K2345.

MATERIAL DISPOSITION (AND CORRESPONDING EFFECTIVITY POINT)

-PAST

-No impact.

-WORK IN PROCESS

-Scrap all parts.

-FUTURE

-No impact after FCO is incorporated.

Ensure incorporation instructions and material disposition is consistent with the Change class and negotiated with the affected Production Agency. UPPERCASE TEXT is intended to remain in each FCO.

IMPLEMENTATION INSTRUCTIONS (AND CORRESPONDING EFFECTIVITY POINT)

FCO changes will be implemented in Lot 890.

REQUALIFICATION IMPACT (AND JUSTIFICATION FOR REQUALIFICATION OR NO REQUALIFICATION)

Requalification is required to assess new material changes.



Final Change Order (FCO)

- The FCO is a mandatory change release used to specify a change to product definition when changes are incorporated into the product definition
- The FCO is released in tandem with the revised definition, and therefore need not be highly descriptive of the authorized changes
- The FCO documents closure of the change authorized by an ACO
- NNSA requires that changes authorized under ACO be closed by issuance of an FCO and release of the revised definition within 90 days



FCO Cheat Sheet

SAMPLE

FCO Cheatsheet

Rev A

This document: W-DG-0002

References:
NAP-24A
T040
T044
W-SE-0047

- A Final Change Order (FCO) specifies a change to product definition.
- The FCO must be used to incorporate changes released in an ACO and to close the ACO, but can be used to incorporate changes when advance communication of changes is not required.

NWC Release Date: 2018 08 01 6:30:05 MT
Category: Change Release
Authorization Title: Final Change Order
Document Number: 20191234LA
Revision: 0
Part Number: 1K1234-00
Weapon Program: B2-1
Affected Assemblies: 1K9876-00
Related Authorizations: FCO 20191234LA
CER 20192345LA
FCO 20181234LA
ACO 20190865LA
ACO 20191231LA

Code: FCO

ICO: NONE

Change Class: C

Relate applicable ICO if applicable

Class C cannot be used if the changes could degrade safety, stockpile life, function, reliability, or interchangeability

The next-level assembly that is affected by this product FCO

List any ACO(s) closed by the FCO. List the related product definition release (DER, AER, or CER) and previous FCO.

APPROVAL

Site	Name
LA	Someone Here
LA	Someone Else Here

Organization	Date Approved
Q-nn	2019-05-01
W-nn	2019-05-01

DISTRIBUTION

	Site	Name	Organization	Phone Number	E-Mail
From:	LA	Someone Here	nnn	505-456-7890	zzzz@lanl.gov
To:	KC	Someone There	nnn	816-456-7890	yyyy@kcp.com
Copy To:	LA	Someone Else	nnn	505-456-7891	xxxx@lanl.gov
	KC	Another Person	nnn	816-456-7891	www@kcp.com

REASON FOR RELEASE

/Rev 0/ (2018-08-01)

1.0

Incorporate ACO 201900865LA and ACO 20191231LA into drawing 1K1234. This FCO changes the height in drawing 1K1234.

Succinctly state the reasons for the EA release



FCO Cheat Sheet

SAMPLE

REFERENCE AND REMARKS

1.0 DA evaluation of the three design changes to indicate they can be made without negatively impacting safety, operability, reliability, interchangeability, assembly, storage life, completeness of assembly, or the ultimate use.

Document the DA's complete administrative and technical justification of why this deviated product is not a problem for the authorized use (next level assembly interferences/impacts over the life of the product)

DRAWING LIST

Drawing Number	New DA Suf	New Iss B	Dwg Loc LA	Drawing Title (U) WIDGET	Drawing Information NONE
1K1234	00	B	LA	(U) WIDGET	NONE

Identify the product definition document(s) actually being changed by the FCO. Could be a product specification, PQ or drawing.

INCORPORATION INSTRUCTIONS AND MATERIAL DISPOSITION

JUSTIFICATION OF CHANGE CLASS (AND CORRESPONDING EFFECTIVITY POINT)

No impact to next level 1K2345.

MATERIAL DISPOSITION (AND CORRESPONDING EFFECTIVITY POINT)

-PAST

-No impact.

-WORK IN PROCESS

-Scrap all parts.

-FUTURE

-No impact after FCO is incorporated.

Ensure incorporation instructions and material disposition is consistent with the Change class and negotiated with the affected Production Agency. UPPERCASE TEXT is intended to remain in each FCO.

IMPLEMENTATION INSTRUCTIONS (AND CORRESPONDING EFFECTIVITY POINT)

FCO changes will be implemented in Lot 890.

REQUALIFICATION IMPACT (AND JUSTIFICATION FOR REQUALIFICATION OR NO REQUALIFICATION)

Requalification is required to assess new material changes.



Minimum Required Approvals per W-SE-0047

Usage	Chief Engineer	W-DO ¹	Q-DO ²	System Group Office	Production Liaison Group Office	Surveillance Group Office	GTS ³ Group Office	Detonator Group Office	Weapon Response / Nuclear Explosive Safety Office ⁴	Author's Group Office
Product Definition				X	X					X
Surveillance Definition				X		X				X
GTS Definition				X	X		X			X
Detonator Definition				X	X			X		X
Class A changes	X	X	X	X	X	X				X
Pantex Impacts									Add	
<p>1 Weapon Systems Engineering Division Office (W-DO)</p> <p>2 Weapon Stockpile Modernization Division Office (Q-DO)</p> <p>3 Gas transfer system (GTS)</p> <p>4 All EAs that impact Pantex nuclear explosive operations must be approved by W-10 (Weapon Response) and W-NES. Contact W-10 and W-NES to review EA details for potential impacts.</p>										



Change Class

- A Change Class is assigned to each product change to indicate its design significance and the general action taken by the PA to incorporate the change.
- Change Release EAs must include the Effectivity Point and be aligned with the change class.

Change Class	Definition
Class A	<p>Class A is assigned to a product change that minimizes the serious probability of safety hazards, failure in stockpile, failure in function, loss of reliability, or failure to have interchangeability. When a Class A change is issued, the change is incorporated before further procurement, fabrication, or acceptance of product, provided that</p> <ol style="list-style-type: none"> disposition of previously accepted, unchanged product at or below the highest level changed on a Class A basis is prescribed in the change authorization, and the impact on scheduled acceptance of War Reserve (WR) or First Production Unit (FPU) WR weapons is considered. A Stop Production Notice is issued before incorporating any change that will delay weapon acceptance.
Class B	<p>Class B is assigned to a product change that improves safety, stockpile life, function, reliability, or interchangeability. A Class B change is incorporated as soon as possible, but no later than 90 days after release of the change order, provided that</p> <ol style="list-style-type: none"> unchanged product or superseded raw material is reworked or scrapped if so authorized in the change order (Otherwise, the use of relatively expensive, unchanged product or superseded raw material avoids scrap or rework expense not offset by other benefits.), Inter project (IP) lead time is not reduced to less than acceptable minimum IP lead time, and the impact on scheduled acceptance of WR or FPU deliverables is evaluated. A Stop Production Notice is issued before incorporating any change that will delay weapon acceptance.
Class C	<p>Class C is assigned to product changes made to facilitate manufacturing by improving yields, reducing costs, or saving time, all without degrading safety, stockpile life, function, reliability, or interchangeability. A Class C change is incorporated as stated in the change order when negotiated with the appropriate PA representative in advance or, when not stated in the change order, as soon as determined appropriate by the PA. Incorporation is based on the following considerations.</p> <ol style="list-style-type: none"> Relatively expensive unchanged product or superseded raw material is used to avoid scrap or rework expense unless the PA has determined offsetting benefits. IP lead time is not reduced. Ultimate user (UU) shipments are not delayed.



Change Class

Change Class	Definition
Class ALL	Class ALL is assigned only to a change order issued after an Advance Engineering Release (AER) and before release of authorization to fabricate pilot production and production parts. A Class ALL change is incorporated in all pilot production and production units. If PA action to incorporate a Class ALL change would result in a delay in either IP or UU shipments or in excessive costs, the PA withholds such action pending notification to the DA. Consideration is given to assignment of another class or other revision to the change order.
Class DEV	Class DEV is assigned to a change order for product definitions that have been released by a Development Engineering Release (DER). Incorporation instructions for development product are stated in the change order. Note: Product definition released under a DER does not, by the NSE rules, require change control releases [Advance Change Order (ACO) and/or Final Change Order (FCO)]. In this scenario, the authorizing engineer is responsible for maintaining records of the evolution of the definition.
Class NONE	Class NONE is assigned to product definition changes affecting commercial parts, enterprise requirement documents, customer requirements, and interface documents. In these cases, the Incorporation Instruction and Material Disposition section of the change release includes incorporation instructions.



Summary

- ECR: Requests a change to definition.
- ACO: Documents/authorizes a change to product definition in advance of the revision to the definition documents.
- FCO: Releases/authorizes changed product definition.



References

Number	Title	Website
DBBPS -T040	Engineering Authorization System	https://dppbs.sandia.gov/SitePages/homepage.aspx
W-SE-0008U	Engineering Authorization System	https://int.lanl.gov/org/ddw/aldw/of-fice-design-agency-quality/design-agency-procedures/system-engineering-procedures.shtml
W-DG-0002	LANL EA Cheatsheet and Checklist Desktop Guide	https://int.lanl.gov/org/ddw/aldw/of-fice-design-agency-quality/design-agency-procedures/desktop-guides.shtml
W-SE-0047	Advanced Change Orders, Final Change Orders, and Engineering Change Requests Procedure	https://int.lanl.gov/org/ddw/aldw/of-fice-design-agency-quality/design-agency-procedures/system-engineering-procedures.shtml



Resources

When you have issues or questions regarding the Engineering Authorization System, there are resources you can go to:

- ALDW Office of Design Agency Quality (ALDW-DAQ)
- Production Liaison Group (W-8)
- Engineering Authorization Team (W-11)
- W- and Q- Division Group Leaders
- This training



Acronyms

DTER	Drawing Transfer Engineering Authorization
IER	Information Engineering Authorization
SIER/B	Special Instruction Engineering Release/B Authorization
AER	Advanced Engineering Authorization
CER	Complete Engineering Authorization
DER	Development Engineering Authorization
SIER	Special Instruction Engineering Authorization
EER	Engineering Evaluation Authorization
ESR	Evaluation Status Release



Acronyms (continued)

REN	Reevaluation Notification Authorization
QER	Qualification Evaluation Authorization
ECR	Engineering Change Request Authorization
ACO	Advanced Change Authorization
FCO	Final Change Authorization
SXN	Specification Exception Notice Authorization
SXR	Specification Exception Authorization
DA	Design Agency
PA	Production Agency
DPBPS	Defense Programs Business Process System
M&O Contractors	KCNSC / LANL / LLNL / NNSS / PX/ SNL / SRS / Y-12



Course 6: Complete

